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Total Number of Pages in This Submission 55

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Filing Date	March 31, 2004
First Named Inventor	Bo Xia
Art Unit	2112
Examiner Name	Joseph D. Torres
Attorney Docket Number	1000-0037

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Remarks

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Firm Name	The Law Offices of John C. Scott, LLC		
Signature			
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Date	August 18, 2008	Reg. No.	38,613

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APPELLANTS' BRIEF ON APPEAL

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Bo Xia et al.)	Examiner: Joseph D. Torres
)	
Serial No.: 10/815,133)	Group Art Unit: 2112
)	
Filed: March 31, 2004)	Docket: 1000-0037
)	
For: METHOD AND)	
APPARATUS FOR)	
IMPLEMENTING A LOW)	
DENSITY PARITY)	
CHECK CODE IN A)	
WIRELESS SYSTEM)	

APPELLANTS' BRIEF ON APPEAL

Mail Stop Appeal Brief
Commissioner for Patents
P.O.Box 1450
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Sir:

Appellants hereby appeal to the Board of Patent Appeals and Interferences from the Examiner's final rejection of claims 1-4, 6, 10-16, 18, 20-21, and 30-38 in the final office action mailed on April 3, 2008 in the above-identified patent application. A timely notice of appeal was filed on June 17, 2008.

08/21/2008 MGEPRM1 00000025 10015133

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APPELLANTS' BRIEF ON APPEAL

Serial Number: 10/815,133

Filing Date: March 31, 2004

Title: METHOD AND APPARATUS FOR IMPLEMENTING A LOW DENSITY PARITY CHECK CODE IN A WIRELESS SYSTEM

Assignee: Intel Corporation

Page 2

Dkt: P19060 (INTEL)

1. REAL PARTY IN INTEREST

The real party in interest of the above-captioned patent application is the assignee, INTEL CORPORATION.

2. RELATED APPEALS AND INTERFERENCES

None.

3. STATUS OF THE CLAIMS

A. Current Status of Claims

1. Claims pending: 1-4, 6, 10-16, 18, 20-21, 30-32, and 34-38.
2. Claims canceled: 5, 7-9, 17, 19, 22-29, and 33.
3. Claims withdrawn from consideration but not canceled: None.
4. Claims allowed: None.
5. Claims rejected: 1-4, 6, 10-16, 18, 20-21, 30-32, and 34-38.
6. Claims objected to: 1-4, 6, 10-16, 18, 20-21, and 30-32.

B. Claims on Appeal

Claims 1-4, 6, 10-16, 18, 20-21, 30-32, and 34-38 are the subject of this appeal. No other claims are pending.

4. STATUS OF AMENDMENTS

None

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 is an independent claim directed to a wireless apparatus comprising: (a) a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code, said FEC coder including: (i) a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix; (ii) a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate modified data; (iii) a differential encoder to differentially encode said modified data to generate coded data; and (iv) a concatenation unit to concatenate the input data and the coded data to form a code word; and (b) a wireless transmitter to transmit a wireless signal that includes said code word.

For independent claim 1, examples are disclosed in the specification as filed at, for example, page 4, line 26 to page 5, line 3; page 5, line 18-20; page 8, line 14 to page 9, line 25; Appendix A; and Figs. 2 and 3. The exemplary embodiments disclose a wireless apparatus (page 4, lines 22-26; reference numeral 20 in Fig. 2) comprising: (a) a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code (page 4, line 26 to page 5, line 3; reference numeral 22 in Fig. 2; reference numeral 40 in Fig. 3), said FEC coder including: (i) a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix (page 8, line 14 to page 9, line 25; reference numeral 44 in Fig. 3, Appendix 1); (ii) a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate modified data (page 9, lines 2-4; reference numeral 42 in Fig. 3); (iii) a differential encoder to differentially encode said modified data to generate coded data (page 9, lines 4-10; reference numeral 46 in Fig. 3); and (iv) a concatenation unit to concatenate the input data and the coded data to form a code word (page 9, lines 10-11; reference numeral 48 in

Fig. 3); and (b) a wireless transmitter to transmit a wireless signal that includes said code word (page 5, lines 18-20; reference numeral 32 in Fig. 2).

Claim 15 is an independent claim directed to a method comprising: (a) accessing a computer readable storage medium storing a representation of at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix; (b) matrix multiplying input data by a transpose of said first portion of said parity check matrix; (c) processing a result of said matrix multiplication using differential encoding to generate coded data; (d) concatenating said input data and said coded data to form a code word; and (e) generating and transmitting a wireless signal that includes said code word.

For independent claim 15, examples are disclosed in the specification as filed at, for example, page 8, line 14 to page 9, line 25; page 12, lines 5-16; Figs. 3 and 5; Appendix 1. The exemplary embodiments disclose a method (page 12, lines 5-7; reference numeral 60 in Fig. 5) comprising: (a) accessing a computer readable storage medium storing a representation of at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix (page 12, lines 8-10; page 8, line 14 to page 9, line 25; reference numeral 44 in Fig. 3, Appendix 1); (b) matrix multiplying input data by a transpose of said first portion of said parity check matrix (page 12, lines 7-8, reference numeral 62 in Fig. 5); (c) processing a result of said matrix multiplication using differential encoding to generate coded data (page 12, lines 10-12, reference numeral 64 in Fig. 5); (d) concatenating said input data and said coded data to form a code word (page 12, lines 12-13, reference numeral 66 in Fig. 5); and (e) generating and transmitting a wireless signal that includes said code word (page 12, lines 13-16; reference numeral 68 in Fig. 5).

Claim 30 is an independent claim directed to a system comprising: (a) a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code, said FEC coder including: (i) a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix; (ii) a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate

modified data; (iii) a differential encoder to differentially encode said modified data to generate coded data; and (iv) a concatenation unit to concatenate the input data and the coded data to form a code word; (b) a wireless transmitter to transmit a wireless signal that includes said code word; and (c) at least one dipole antenna coupled to said wireless transmitter to facilitate transmission of said wireless signal.

For independent claim 30, examples are disclosed in the specification as filed at, for example, page 4, line 26 to page 5, line 3; page 5, line 18-20; page 8, line 14 to page 9, line 25; Appendix A; and Figs. 2 and 3. The exemplary embodiments disclose a system (page 4, lines 22-26; reference numeral 20 in Fig. 2) comprising: (a) a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code (page 4, line 26 to page 5, line 3; reference numeral 22 in Fig. 2; reference numeral 40 in Fig. 3), said FEC coder including: (i) a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix (page 8, line 14 to page 9, line 25; reference numeral 44 in Fig. 3, Appendix 1); (ii) a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate modified data (page 9, lines 2-4; reference numeral 42 in Fig. 3); (iii) a differential encoder to differentially encode said modified data to generate coded data (page 9, lines 4-10; reference numeral 46 in Fig. 3); and (iv) a concatenation unit to concatenate the input data and the coded data to form a code word (page 9, lines 10-11; reference numeral 48 in Fig. 3); (b) a wireless transmitter to transmit a wireless signal that includes said code word (page 5, lines 18-20; reference numeral 32 in Fig. 2); and (c) at least one dipole antenna coupled to said wireless transmitter to facilitate transmission of said wireless signal (page 4, lines 26-30; page 5, lines 20-22; reference numeral 34 in Fig. 2).

Claim 34 is an independent claim directed to an article comprising a computer readable storage medium having instructions stored thereon that, when executed by a computing platform, operate to: (a) matrix multiply input data by a transpose of a first portion of a parity check matrix, wherein said first portion of said parity check matrix includes at least half of said parity check matrix; (b) process a result of said matrix multiplication using differential encoding to generate

wherein said parity check matrix, in list file form, is substantially as follows:

[illegible]

2 1

143 225 316 323	79 193 262 336	195 280 299 345	1 84 182 300
92 140 191 358	43 104 125 376	142 151 220 395	45 124 161 396
69 315 329 343	55 114 134 293	70 121 252 382	15 76 99 101
6 121 205 284	240 283 299 333	52 244 279 297	62 248 354 375
58 66 254 337	0 24 57 100	22 131 256 349	78 258 262 311
1 47 178 395	46 84 322 341	47 52 339 346	181 265 364 368
129 151 212 228	5 43 45 221	50 288 342 388	60 168 227 254
66 146 243 265	29 217 274 301	26 87 247 283	162 231 270 377
22 140 157 180	81 93 116 278	67 127 132 136	14 102 139 158
120 208 313 321	93 174 213 231	146 264 321 323	28 79 155 318
290 350 370 382	64 201 251 385	210 275 319 346	28 40 63 236
56 94 184 215	76 134 278 370	57 160 252 261	163 181 258 279
84 119 337 344	71 93 182 398	26 54 170 197	158 176 273 334
2 156 244 398	38 174 250 377	120 218 229 341	80 236 256 380
9 106 200 336	19 116 357 372	44 53 124 323	74 156 214 358
22 37 150 270	81 91 164 307	0 113 315 358	176 229 251 283
3 110 326 367	180 186 241 251	110 144 246 298	19 104 114 162
235 276 290 335	239 254 331 342	89 91 99 346	141 284 291 358
82 187 193 297	107 149 250 295	21 32 216 393	77 123 157 361
43 183 297 379	73 221 295 362	37 170 209 342	141 154 215 338
194 239 243 293	75 97 242 279	49 58 357 399	55 294 296 298
90 144 228 350	32 197 244 313	18 23 31 373	80 109 272 364
170 206 321 395	245 248 276 296	159 172 195 366	43 206 287 363
72 138 254 300	59 230 322 347	213 335 337 378	81 175 206 261
25 196 201 279	17 246 291 364	1 103 159 277	31 94 275 317
56 59 362 379	125 157 227 390	96 159 209 387	10 123 141 279
28 121 170 277	122 205 279 348	102 165 234 378	44 64 157 270
61 273 351 386	61 298 340 380	173 245 356 376	160 243 290 373
71 76 232 328	12 31 256 328	57 230 240 314	39 217 262 324
62 109 190 201	119 163 178 217	1 89 153 166	19 185 312 389
111 162 190 227	61 129 185 200	25 32 264 342	211 271 277 291
189 272 288 302	34 38 104 295	265 276 321 324	19 148 155 324
14 49 147 334	119 289 349 377	57 211 274 360	24 94 124 314
33 53 213 238	50 314 322 367	12 291 311 348	3 85 193 349
53 219 368 379	28 48 248 382	34 220 258 282	68 175 202 253
126 149 188 339	32 41 128 201	52 58 109 379	139 160 337 377
108 118 182 393	91 115 220 368	116 248 337 369	21 224 249 398
0 37 160 295	45 151 196 265	87 146 183 278	113 122 206 327
158 200 335 356	152 190 198 317	42 96 318 361	7 10 156 245
11 20 229 397	157 212 242 275	32 176 312 361	140 182 192 235
77 86 212 250	2 40 249 283	69 258 310 389	161 291 324 387

31 232 237 350	256 285 310 399	0 88 303 307	11 115 227 236
30 184 235 387	103 247 275 378	13 23 62 268	152 202 211 373
136 226 269 327	115 218 225 285	13 173 279 320	4 173 346 374
4 93 136 167	98 196 217 328	117 189 253 392	132 197 238 279
47 148 309 348	177 267 306 350	32 40 57 350	16 94 150 222
73 225 252 290	82 299 320 395	57 123 148 368	241 344 375 386
44 213 361 386	139 251 364 381	18 96 164 326	31 121 161 231
79 319 361 381	42 118 178 194	84 103 107 359	9 33 197 350
74 251 339 356	73 100 198 286	92 338 350 355	87 197 233 312
100 105 246 293	68 249 292 376	16 70 242 338	100 111 129 368
68 101 191 285	13 216 221 256	20 74 141 179	184 278 289 346
32 103 323 355	127 138 177 398	159 246 248 365	76 177 227 356
122 188 228 305	20 69 239 264	207 292 387 399	11 132 246 314
6 77 291 397	3 126 132 163	38 148 303 347	46 93 103 309
70 76 259 276	66 88 169 271	68 113 296 389	20 33 64 196
72 270 335 348	88 197 201 387	12 257 286 325	111 134 194 204
93 147 255 312	1 51 135 149	50 287 294 327	76 116 140 238
92 112 259 388	257 294 331 356	149 259 356 367	189 298 326 381
9 18 61 308	204 260 288 294	3 12 178 309	235 317 320 333
3 137 139 257	45 144 185 383	63 92 166 368	127 301 348 376
165 217 345 354	173 310 329 362	97 190 199 363	51 286 309 377
78 134 263 280	15 165 305 348	13 86 92 308	17 70 139 187
186 213 227 303	27 66 85 182	132 141 221 322	54 180 184 344
68 194 294 346	47 235 238 246	213 257 348 396	85 311 318 327
35 225 284 312	230 276 293 367	91 147 294 325	263 312 364 369
117 188 340 346	118 150 267 324	14 27 48 222	97 149 198 336
258 299 306 331	68 82 309 398	11 81 110 360	31 141 151 285
83 194 207 349	72 154 226 231	10 50 357 393	72 163 187 311
43 141 175 329	76 135 151 384	35 89 248 252	24 54 249 297
0 68 170 262	39 48 80 309	6 55 319 345	64 143 322 360
25 36 153 309	0 178 305 353	107 116 223 271	53 73 122 256
57 62 273 323	88 136 196 321	168 240 261 384	100 138 214 226
7 19 75 264	37 95 222 300	54 204 295 351	265 348 373 378
21 254 259 366	23 343 358 369	3 51 146 299	42 62 113 174
8 97 156 172	195 252 303 349	74 184 307 361	29 313 349 358
9 185 313 330	9 81 102 317	9 202 272 387	154 179 217 268
55 219 253 393	20 219 285 316	106 198 281 329	164 289 380 392
86 120 185 233	219 281 304 354	36 105 225 236	109 165 236 312
41 136 191 242	33 121 319 351	90 139 183 299	92 141 193 238
194 265 303 393	21 157 191 260	152 160 292 354	190 243 267 275

95 143 203 393	152 163 352 385	27 89 214 388	90 241 261 367
130 213 264 308	40 161 165 329	77 79 83 289	39 161 202 206
102 133 217 226	113 215 245 378	119 236 323 383	101 132 135 250
69 88 116 295	80 168 262 382	1 44 271 372	117 191 213 352
108 217 273 322	81 136 165 239	25 42 104 215	132 233 270 303
26 287 306 343	2 42 248 323	144 153 357 362	16 251 266 370
8 18 136 152	111 127 157 330	133 153 273 383	41 45 60 99
110 240 245 334	79 125 239 341	152 174 269 355	182 197 276 331
225 255 278 310	147 172 187 397	107 193 210 320	40 257 262 322
63 168 170 303	230 245 277 352	194 298 317 331	148 208 332 352
8 17 255 314	49 202 350 381	22 112 139 222	127 159 253 290
28 92 98 200	34 56 167 242	147 152 221 365	273 289 325 341
112 201 244 392	36 58 61 83	20 48 130 353	95 145 231 297
134 216 344 383	107 110 133 251	58 100 125 172	70 110 225 313
21 97 115 396	100 245 295 330	79 181 242 313	50 112 166 302
28 69 120 380	16 71 175 397	174 254 304 321	68 97 128 218
34 259 267 314	106 206 229 236	70 129 283 385	90 264 269 280
55 72 87 223	177 308 371 387	18 79 296 345	22 132 258 368
43 180 185 252	89 122 207 362	14 25 34 52	65 124 129 325
23 113 133 277	3 166 190 305	31 88 212 226	95 105 111 385
258 285 347 350	155 171 289 336	26 53 123 165	109 233 250 302
246 253 318 399	34 37 293 301	101 108 248 328	8 33 80 318
12 78 90 369	143 189 255 338	49 115 190 395	51 253 281 288
17 93 96 102	38 75 137 166	23 119 139 282	209 237 346 391
109 162 318 360	62 92 124 366	27 206 209 324	12 198 221 269
22 83 151 290	73 83 105 136	203 221 332 356	9 141 229 306
141 191 240 266	69 134 200 366	181 190 288 379	0 114 219 300
25 90 138 390	179 324 366 386	38 73 249 368	242 289 318 335
81 113 265 382	72 82 188 192	45 49 264 394	41 90 163 215
88 142 210 283	100 120 189 375	89 112 218 316	65 80 99 167
10 40 43 140	244 252 318 329	144 186 297 343	269 296 303 356
2 195 268 328	3 105 116 203	152 177 233 237	45 106 232 346
117 240 257 374	280 282 288 365	74 171 223 334	86 195 293 391
298 332 350 365	38 196 330 369	4 16 44 89	140 193 245 321
60 122 240 313	20 31 113 381	103 165 177 358	88 150 183 380
157 215 274 397	56 173 205 390	53 217 342 383	230 253 315 373
11 41 164 274	2 30 165 366	58 88 126 370	53 184 258 263
67 76 92 104	41 75 169 302	4 214 243 383	17 79 261 286
19 192 305 344	210 271 330 334	5 96 155 354	94 293 302 397
23 35 125 224	60 109 199 348	7 61 214 237	170 218 358 376

61 246 287 292	57 242 262 316	24 27 171 183	8 29 355 393
61 162 245 303	20 171 259 396	237 293 322 352	36 126 155 373
25 286 333 355	257 288 338 361	81 90 223 363	145 195 227 333
159 241 263 354	12 290 362 367	71 85 128 380	45 206 344 369
134 186 305 327	153 236 304 330	159 309 314 334	8 166 301 397
33 38 283 301	12 144 261 329	17 117 315 379	11 47 141 184
17 44 159 398	33 92 106 173	87 120 206 267	7 112 256 377
108 167 174 374	68 89 159 308	67 116 188 349	108 300 310 312
90 105 172 257	9 23 41 301	63 232 338 365	208 218 364 378
93 165 180 353	109 160 278 387	178 272 327 392	53 114 278 291
137 289 296 386	138 235 241 356	19 35 204 386	131 138 201 365
241 273 276 359	225 256 321 332	194 235 289 345	225 279 371 378
44 94 211 286	32 42 253 275	29 50 154 315	122 275 376 395
166 184 204 226	95 199 219 225	22 47 353 387	169 217 239 357
98 281 357 389	116 328 345 395	0 137 143 167	18 65 128 288
41 107 187 298	128 159 161 207	21 162 195 339	6 62 86 198
19 47 379 399	111 306 363 373	24 225 233 338	37 80 119 211
1 16 272 296	174 256 368 381	177 225 232 281	0 46 139 339
107 203 283 322	18 104 115 317	77 149 241 310	0 30 216 306
77 245 266 390	102 115 140 394	319 325 363 374	82 152 277 367
29 166 345 364	91 96 128 327	77 251 308 379	23 178 350 366
61 229 356 361	97 99 300 385	183 203 290 330	121 212 243 384
70 105 229 250	40 150 229 316	158 246 275 352	257 284 326 382
268 334 344 368	124 315 322 359	78 99 210 238	57 138 311 343
78 82 283 393	21 221 286 301	222 271 380 393	295 318 322 377
7 299 327 334	27 88 147 216	79 107 201 351	78 343 373 377
47 82 117 126	10 124 128 309	66 90 275 287	79 89 131 254
86 100 337 379	57 131 209 296	65 219 247 398	61 74 304 382
299 347 372 375	230 237 264 371	16 203 207 237	30 70 168 253
150 156 299 302	28 118 231 283	101 216 333 357	64 156 306 332
145 252 294 377	5 114 230 309	2 39 326 373	162 197 255 275
155 218 250 392	122 189 204 251	51 151 305 341	33 71 91 112
131 172 250 278	74 151 203 218	6 25 30 130	13 132 247 391
17 64 107 195	69 270 288 359	2 91 146 227	22 208 226 392
26 55 142 181	22 49 291 383	46 141 273 298	56 60 158 164
106 181 327 342	80 90 174 249	157 331 374 385	20 105 120 199
101 103 340 368	182 310 314 318	172 223 237 258	133 232 236 341
44 196 198 280	115 254 336 399	15 93 128 250	90 107 293 370
39 148 192 385	42 63 135 343	94 261 312 341	17 32 254 263
37 130 182 207	46 232 385 391	167 186 202 372	8 173 238 266

30 167 169 391	13 55 71 106	56 196 212 332	12 47 160 172
43 213 328 362	7 306 347 364	76 205 335 385	84 178 230 343
73 231 244 282	145 163 197 228	75 101 209 349	80 238 321 376
71 221 245 253	66 97 212 320	28 172 242 294	170 213 331 367
215 225 258 335	133 176 282 305	18 71 267 297	12 136 274 326
46 87 263 384	22 187 205 372	84 115 233 384	13 51 96 147
81 96 282 338	102 160 180 258	63 139 216 325	23 264 334 346
192 222 306 353	164 197 311 398	23 64 310 348	29 122 183 356
8 115 292 305	75 119 186 254	63 130 188 352	78 287 330 349
36 170 186 260	6 15 65 396	23 45 160 165	42 69 131 198
10 85 212 300	30 108 341 399	42 114 382 399	36 43 189 216
5 129 198 365	217 276 326 347	25 207 339 365	44 142 195 344
19 107 153 308	160 237 274 285	16 334 374 398	40 147 260 330
10 57 98 215	173 248 262 348	86 251 274 277	125 325 379 387
181 211 228 339	52 65 218 351	157 166 297 316	90 111 126 301
62 89 163 295	135 140 253 366	171 200 230 265	113 177 226 273
43 77 113 143	5 81 176 260	34 107 325 364	96 172 181 218
125 149 196 218	58 215 326 364	71 220 227 330	17 124 154 373
83 147 183 279	76 87 102 315	177 263 277 344	87 285 306 376
62 145 180 397	98 131 259 332	75 138 262 293	83 163 173 299
84 280 331 360	15 30 35 55	189 300 366 377	65 87 245 333
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69 129 168 187	38 162 311 373	2 51 145 208	1 29 54 379
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7 47 218 308	80 260 316 348	144 197 277 360	5 40 167 238
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87 168 275 343	80 146 156 375	199 214 265 280	93 169 209 328
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85 214 362 395	21 55 85 304	18 143 335 392	65 183 369 376
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176 342 351 390	125 132 210 219	118 153 171 366	146 187 293 319
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62 232 264 373	288 317 324 389	104 168 283 305	94 108 244 288
103 106 146 344	43 320 334 382	199 202 343 399	16 42 200 250
134 268 295 398	5 29 145 281	15 164 192 273	2 64 193 399
120 220 250 354	25 124 232 345	62 199 222 228	129 172 276 379
115 208 355 398	11 119 339 359	67 94 166 256	26 176 234 319
74 190 343 352	5 36 231 316	85 227 250 321	118 135 205 312
258 325 332 371	15 138 354 389	91 121 295 324	115 176 290 359
14 256 347 353	25 82 136 180	3 16 308 340	9 143 188 374
24 33 122 234	20 103 167 266	143 157 307 395	96 186 247 353
98 272 300 342	112 292 359 371	36 77 116 340	30 72 320 388
210 221 268 337	184 201 240 328	3 98 101 125	17 137 186 193
8 94 154 347	77 160 307 339	39 151 364 377	34 229 265 284
195 285 321 327	74 147 280 389	194 227 231 267	129 207 282 287
12 51 54 354	127 149 358 387	59 200 206 389	68 118 275 305
16 41 149 389	50 59 117 185	21 106 287 389	153 172 249 307
55 66 206 297	11 189 212 220	33 268 340 387	106 179 212 378
129 202 214 285	123 135 226 372	140 150 395 398	22 48 105 347
73 96 104 310	83 86 149 386	88 352 360 367	98 137 346 379
55 200 270 318	26 95 121 163	55 91 145 168	41 98 165 232
58 120 150 217	30 54 178 315	126 130 181 323	54 63 99 123
58 279 339 397	136 301 341 365	34 120 227 316	81 213 315 394
60 180 247 308	21 59 265 299	237 337 355 394	38 66 87 191
48 127 213 356	111 154 282 297	34 186 219 313	71 121 294 396
62 128 291 329	6 74 290 349	280 330 340 375	109 200 345 375
26 35 127 323	121 142 174 236	76 230 354 378	33 70 217 266
77 144 286 296	108 129 152 261	5 178 293 297	11 111 210 240
10 47 192 259	152 164 205 377	142 223 234 381	261 271 290 396
122 196 210 329	144 281 332 335	48 239 260 399	190 225 298 369
63 162 235 268	92 244 315 326	58 270 336 360	16 140 227 352
25 45 218 310	66 128 170 221	24 123 271 347	118 183 262 383
67 336 354 393	21 109 174 397	12 76 137 280	17 218 260 350
16 278 347 381	5 154 201 239	107 226 302 367	50 56 278 351

15 36 150 280	51 204 209 307	63 193 300 329	34 113 207 286
18 107 151 176	125 198 289 301	291 332 354 396	69 100 222 231
22 188 244 337	136 214 216 263	19 103 260 383	14 150 387 396
72 186 302 350	97 270 314 338	5 303 328 375	17 73 228 248
65 145 221 239	78 127 215 226	131 237 298 384	29 193 232 259
52 117 331 393	27 242 348 357	103 183 281 286	40 148 359 374
7 37 265 285	94 181 191 363	5 224 263 358	38 281 316 327
56 283 338 382	7 91 93 348	197 199 247 382	70 87 100 395
78 217 337 351	60 193 267 333	18 228 332 344	26 231 295 369
6 247 249 370	185 237 272 381	16 26 57 68	214 234 269 288
1 161 241 255	15 52 166 225	2 158 259 384	77 154 320 365
101 166 183 220	27 100 126 275	128 181 371 398	27 76 86 155
99 198 326 335	70 96 163 333	98 179 247 319	65 139 175 240
105 234 340 384	11 175 273 282	41 71 138 326	33 130 223 286
60 233 242 397	14 212 392 398	175 244 301 317	215 271 317 344
207 215 223 293	91 105 300 382	81 145 226 371	8 47 113 153
233 279 351 380	4 79 232 370	125 202 226 309	194 233 361 377
83 106 188 311	21 75 158 347	115 169 276 298	88 202 284 394
97 185 361 392	331 341 343 386	192 268 296 391	29 118 285 380
14 26 72 304	0 103 163 270	31 167 220 223	96 154 312 383
51 162 194 387	7 95 171 326	39 241 358 382	19 250 318 359
94 245 273 287	16 24 49 133	67 112 159 236	32 282 289 334
26 177 205 314	58 242 363 390	71 180 208 266	56 272 294 303
14 92 385 389	8 236 254 290	59 143 248 394	10 68 72 210
111 211 366 390	50 83 140 370	99 128 223 388	184 261 382 386
27 71 110 327	233 258 340 364	6 192 221 351	202 204 315 342
99 257 359 389	63 289 292 313	129 238 257 378	66 102 195 207
124 295 372 397	231 245 336 342	29 192 252 392	97 243 272 301
12 43 117 356	35 38 246 299	6 110 177 269	92 128 156 304
65 117 136 354	104 246 249 281	29 79 205 241	68 313 385 390
39 67 191 212	161 248 285 325	233 246 325 331	13 32 49 271
80 166 176 358	13 21 192 220	11 211 321 384	4 80 123 277
99 208 353 361	82 89 200 209	144 282 337 386	89 135 243 375
32 46 104 222	8 264 313 368	33 79 327 385	88 372 381 388
4 25 72 203	11 26 242 286	30 110 179 321	66 108 222 274
2 124 130 262	37 248 303 388	86 133 234 284	28 59 164 167
28 113 210 232	64 187 324 392	54 58 72 289	201 204 313 324
66 77 158 268	209 216 230 243	22 145 269 373	73 311 388 397
61 98 202 330	73 241 250 260	81 172 211 381	109 186 243 261
47 67 181 247	181 187 235 239	59 246 252 255	116 125 276 398

58 185 287 293	114 148 151 373	136 140 207 317	40 80 132 196
40 203 279 314	60 121 145 343	9 278 280 325	183 213 229 249
46 50 86 255	112 195 277 296	4 19 59 360	105 228 232 238
23 48 109 120	29 302 310 334	21 79 94 356	64 278 290 357
236 297 325 333	38 156 251 280	26 158 345 353	20 116 173 251
123 155 320 384	130 209 249 266	95 172 261 374	97 261 308 393
36 67 169 274	43 161 250 322	27 119 364 373	20 100 146 165
54 102 191 239	7 168 182 185	35 245 335 374	67 84 164 376
8 109 198 391	15 45 189 286	139 162 184 228	155 260 300 352
143 176 238 370	191 205 301 305	53 84 214 363	116 118 147 233
39 41 105 208	155 235 282 299	17 153 242 386	61 174 328 371
126 197 342 357	40 114 194 372	30 137 274 313	30 60 155 368
9 40 191 384	249 263 323 372	68 169 256 369	39 142 169 232
51 148 207 270	36 214 252 380	30 119 206 394	54 76 318 358
49 114 243 360	176 201 258 373	224 325 365 380	196 341 352 391
60 87 303 370	102 208 340 379	50 178 188 274	61 63 333 350
138 190 248 283	85 161 240 262	2 56 169 225	42 130 307 331
78 97 139 144	5 17 199 339	43 75 167 296	25 190 224 282
177 180 244 272	150 230 306 341	28 131 274 304	57 238 375 393
44 123 243 287	46 123 204 318	107 263 309 385	5 158 186 355
122 211 304 388	71 130 143 271	101 238 310 395	83 110 385 399
70 117 278 332	208 268 365 396	35 58 238 345	48 154 166 308
31 85 343 394	257 263 336 395	43 61 106 391	2 75 288 340
47 133 244 312	218 267 334 360	86 113 161 390	86 223 248 264
20 144 299 368	53 74 255 302	35 316 329 376	67 135 158 350
25 84 335 395	104 175 302 311	37 161 224 306	80 133 345 351
102 199 213 283	228 338 360 369	14 53 98 269	51 195 265 335
64 164 169 224	8 35 112 394	179 207 236 269	63 117 159 196
50 152 224 276	39 130 336 365	10 163 205 369	13 16 37 143
42 184 390 398	13 170 198 378	31 92 162 396	70 95 306 391
1 73 349 396	56 156 162 181	85 268 314 345	178 187 249 316
238 317 354 385	47 95 104 272	1 31 249 319	37 52 162 307
46 70 296 379	9 291 333 362	35 56 281 333	173 211 237 344
156 247 278 334	121 128 193 322	137 199 223 376	41 114 210 233
130 235 319 390	159 276 311 392	52 320 338 362	102 202 287 354
0 108 120 213	15 42 105 267	65 224 307 390	136 185 223 303
11 93 146 235	4 23 202 388	146 310 346 384	86 265 287 355
96 255 374 376	23 61 260 307	101 138 193 307	11 66 131 255
85 146 204 366	42 124 355 380	234 314 342 394	124 147 319 392
146 254 365 391	124 259 374 386	19 109 127 214	46 67 152 380

64 82 111 312	83 137 247 276	19 119 226 387	45 209 255 311
78 123 264 317	31 56 117 325	115 167 294 319	54 182 261 302
24 45 85 295	211 281 307 358	53 222 233 236	128 190 241 384
118 141 244 255	49 118 211 372	18 52 63 182	7 48 66 82
17 164 229 252	70 179 221 371	79 102 148 311	173 315 372 382
27 132 134 179	38 260 266 388	140 270 351 369	41 49 117 320
173 216 220 247	142 222 253 335	91 255 289 389	45 82 120 133
246 306 375 384	83 88 180 363	163 285 330 338	6 42 195 295
75 160 187 263	153 371 374 393	237 251 312 359	171 201 344 377
171 236 329 389	142 161 286 312	39 186 288 301	94 179 205 344
58 178 196 380	34 111 221 243	29 188 211 367	32 144 219 315
171 203 256 370	40 66 91 391	269 298 391 397	226 257 333 386
5 134 277 330	55 120 165 209	85 95 292 307	24 102 182 375
110 153 320 336	4 28 46 292	72 150 266 314	49 86 123 175
24 93 369 383	149 222 244 357	101 199 253 359	62 151 266 298
35 100 244 361	190 339 362 364	18 41 259 368	272 323 339 367
327 345 369 396	10 67 187 338	122 125 185 324	99 160 273 330
27 37 185 277	2 132 168 263	58 294 318 365	194 274 324 368
257 259 321 362	9 63 294 305	84 210 216 235	51 127 158 191
23 253 280 370	26 60 148 224	54 142 147 355	2 98 164 393
13 44 99 224	59 157 188 224	73 91 174 353	90 108 149 315
57 69 114 224	139 220 320 349	15 48 292 323	8 122 129 299
70 154 185 352	69 202 336 385	4 62 67 126	8 48 64 210
34 269 338 367	20 92 313 331	109 129 191 203	56 106 207 240
77 170 234 326	44 79 316 392	143 154 168 205	48 87 212 340
138 171 192 269	104 177 254 335	24 75 127 304	38 231 288 394
173 192 284 371	4 199 234 308	34 142 182 363	137 353 378 393
68 155 164 353	76 139 192 332	10 198 303 308	119 150 272 355
4 22 201 212	1 252 322 331	146 258 273 361	64 92 190 291
206 234 259 270	89 217 352 378	113 132 220 359	4 51 121 215
35 168 176 389	83 156 175 211	39 179 252 274	119 171 229 253
103 162 351 370	75 132 341 364	6 176 199 318	65 357 363 370
49 59 102 212	78 106 204 272	33 55 95 124	83 172 197 280
155 192 270 287	65 159 214 284	134 228 283 329	27 131 360 396
4 81 95 119	141 161 342 353	75 175 339 371	77 136 150 309
135 138 200 301	336 375 381 397	78 89 202 322	3 121 179 230
11 32 294 357	143 260 291 302	85 197 310 390	10 104 152 326
10 73 84 173	84 298 339 375	59 112 305 323	64 134 178 182
25 48 97 145	219 234 357 374	154 163 287 305	214 300 353 386
7 223 280 366	0 118 292 328	83 195 206 264	110 254 268 346

272 304 337 347	101 134 140 381	124 166 279 317	1 155 239 268
37 165 235 262	50 148 194 257	45 130 237 361	265 278 329 342
1 36 234 297	1 222 340 378	6 189 316 347	18 118 234 242
69 281 347 371	67 155 220 365	74 135 142 311	135 189 337 353
59 264 271 348	15 156 210 262	85 153 177 222	18 28 123 159
175 255 277 357	53 125 134 231	120 154 210 237	26 44 88 267
51 97 374 399	192 337 357 360	0 98 291 388	12 50 103 251
108 223 317 360	170 203 216 266	32 259 287 333	144 242 244 372
82 125 216 228	2 71 74 362	184 314 389 397	53 181 221 229
134 154 172 317	40 97 101 356	101 189 296 383	46 89 180 281
49 65 74 157	54 117 145 201	126 160 235 240	3 53 285 382
3 112 266 356	34 81 147 326	111 120 212 288	175 184 205 209
81 204 254 262	5 121 256 311	10 174 209 291	94 208 276 349
3 113 263 332	14 176 272 383	112 114 186 239	14 37 131 266
100 151 205 240	283 297 340 396	164 179 304 346	135 227 367 392
95 125 180 303	7 36 307 320	90 127 252 284	13 59 103 207
234 292 306 352	114 241 271 315	53 173 282 333	48 78 84 243
149 227 349 355	96 179 249 302	82 87 98 354	94 252 262 306
111 142 267 321	7 9 170 394	77 106 138 345	168 316 324 380
27 203 228 361	46 284 308 388	74 329 360 366	196 255 260 394
52 277 309 390	104 158 332 362	167 322 332 395	11 105 178 243
33 57 284 302	109 153 189 370	52 88 276 294	19 122 177 339
35 50 66 219	14 110 338 381	47 199 299 391	64 203 304 319
22 27 149 215	101 142 257 376	3 219 275 297	12 174 194 208
13 28 84 206	93 129 359 394	3 30 375 378	46 52 271 377
59 108 337 349	133 137 142 314	110 134 158 282	62 149 169 353
73 171 273 345	187 215 269 294	151 188 359 388	133 205 239 387
68 140 200 363	116 121 300 363	191 199 304 333	174 206 285 292
38 111 233 358	57 251 267 386	42 191 274 383	14 43 99 137
157 289 328 372	14 126 335 379	51 99 384 394	87 111 371 377
160 188 284 327	31 133 250 268	146 343 367 376	73 137 177 261
137 304 349 374	9 183 241 342	153 247 284 375	10 105 184 352
140 168 204 341	37 164 279 324	36 133 204 243	126 286 347 390
132 223 298 336	118 130 187 270	110 224 265 277	72 91 148 196
71 114 184 200	135 169 182 319	86 129 319 371	12 162 292 363
60 135 323 399	6 149 204 220	103 127 201 336	6 112 273 399
9 38 179 245	63 150 214 259	39 50 247 256	0 1
114 157 229 366	19 65 348 388	119 165 230 370	1 2
229 297 323 342	15 46 151 383	21 82 248 311	2 3
24 36 89 106	22 160 227 230	84 137 239 315	3 4

4 5	44 45	84 85	124 125
5 6	45 46	85 86	125 126
6 7	46 47	86 87	126 127
7 8	47 48	87 88	127 128
8 9	48 49	88 89	128 129
9 10	49 50	89 90	129 130
10 11	50 51	90 91	130 131
11 12	51 52	91 92	131 132
12 13	52 53	92 93	132 133
13 14	53 54	93 94	133 134
14 15	54 55	94 95	134 135
15 16	55 56	95 96	135 136
16 17	56 57	96 97	136 137
17 18	57 58	97 98	137 138
18 19	58 59	98 99	138 139
19 20	59 60	99 100	139 140
20 21	60 61	100 101	140 141
21 22	61 62	101 102	141 142
22 23	62 63	102 103	142 143
23 24	63 64	103 104	143 144
24 25	64 65	104 105	144 145
25 26	65 66	105 106	145 146
26 27	66 67	106 107	146 147
27 28	67 68	107 108	147 148
28 29	68 69	108 109	148 149
29 30	69 70	109 110	149 150
30 31	70 71	110 111	150 151
31 32	71 72	111 112	151 152
32 33	72 73	112 113	152 153
33 34	73 74	113 114	153 154
34 35	74 75	114 115	154 155
35 36	75 76	115 116	155 156
36 37	76 77	116 117	156 157
37 38	77 78	117 118	157 158
38 39	78 79	118 119	158 159
39 40	79 80	119 120	159 160
40 41	80 81	120 121	160 161
41 42	81 82	121 122	161 162
42 43	82 83	122 123	162 163
43 44	83 84	123 124	163 164

164 165	204 205	244 245	284 285
165 166	205 206	245 246	285 286
166 167	206 207	246 247	286 287
167 168	207 208	247 248	287 288
168 169	208 209	248 249	288 289
169 170	209 210	249 250	289 290
170 171	210 211	250 251	290 291
171 172	211 212	251 252	291 292
172 173	212 213	252 253	292 293
173 174	213 214	253 254	293 294
174 175	214 215	254 255	294 295
175 176	215 216	255 256	295 296
176 177	216 217	256 257	296 297
177 178	217 218	257 258	297 298
178 179	218 219	258 259	298 299
179 180	219 220	259 260	299 300
180 181	220 221	260 261	300 301
181 182	221 222	261 262	301 302
182 183	222 223	262 263	302 303
183 184	223 224	263 264	303 304
184 185	224 225	264 265	304 305
185 186	225 226	265 266	305 306
186 187	226 227	266 267	306 307
187 188	227 228	267 268	307 308
188 189	228 229	268 269	308 309
189 190	229 230	269 270	309 310
190 191	230 231	270 271	310 311
191 192	231 232	271 272	311 312
192 193	232 233	272 273	312 313
193 194	233 234	273 274	313 314
194 195	234 235	274 275	314 315
195 196	235 236	275 276	315 316
196 197	236 237	276 277	316 317
197 198	237 238	277 278	317 318
198 199	238 239	278 279	318 319
199 200	239 240	279 280	319 320
200 201	240 241	280 281	320 321
201 202	241 242	281 282	321 322
202 203	242 243	282 283	322 323
203 204	243 244	283 284	323 324

324 325	343 344	362 363	381 382
325 326	344 345	363 364	382 383
326 327	345 346	364 365	383 384
327 328	346 347	365 366	384 385
328 329	347 348	366 367	385 386
329 330	348 349	367 368	386 387
330 331	349 350	368 369	387 388
331 332	350 351	369 370	388 389
332 333	351 352	370 371	389 390
333 334	352 353	371 372	390 391
334 335	353 354	372 373	391 392
335 336	354 355	373 374	392 393
336 337	355 356	374 375	393 394
337 338	356 357	375 376	394 395
338 339	357 358	376 377	395 396
339 340	358 359	377 378	396 397
340 341	359 360	378 379	397 398
341 342	360 361	379 380	398 399
342 343	361 362	380 381	399.

For independent claim 34, examples are disclosed in the specification as filed at, for example, page 12, lines 7-19; Fig. 5; Appendix A. The exemplary embodiments disclose an article comprising a computer readable storage medium having instructions stored thereon (page 12, lines 16-19) that, when executed by a computing platform, operate to: (a) matrix multiply input data by a transpose of a first portion of a parity check matrix, wherein said first portion of said parity check matrix includes at least half of said parity check matrix (page 12, lines 7-8, reference numeral 62 in Fig. 5); (b) process a result of said matrix multiplication using differential encoding to generate coded data (page 12, lines 10-12, reference numeral 64 in Fig. 5); (c) concatenate said input data and said coded data to form a code word (page 12, lines 12-13, reference numeral 66 in Fig. 5); and (d) generate and transmit a wireless signal that includes said code word (page 12, lines 13-16; reference numeral 68 in Fig. 5); wherein said parity check matrix, in list file form, is substantially as follows: [see matrix description above] (page 12, lines 9-10; Appendix A).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 1-4, 6, 10-16, 18, 20-21, and 30-32 were properly rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

B. Whether claims 1, 2, 4, 6, 10, 15-16, 18, 20, and 34-38 were properly rejected under 35 U.S.C. 103(a), as being unpatentable over *Yang* (Michael Yang, Yan Li and William E. Ryan; Design of Efficiently Encodable Moderate-Length High-Rate Irregular LDPC Codes; Proceedings of the Annual Conference on Communication, Control and Computing, October 2, 2002, pages 1415-1424) (hereinafter *Yang*) in view of *Lu et al.* (Ben Lu, Xiaodong Wang, and Krishna R. Narayanan; LDPC-Based Space-Time Coded OFDM Systems Over Correlated Fading Channels: Performance Analysis and Receiver Design; IEEE TRANSACTIONS ON COMMUNICATIONS, VOL. 50, NO. 1, JANUARY 2002, pages 74-88) (hereinafter *Lu*).

C. Whether claims 3 and 21 were properly rejected under 35 U.S.C. 103(a), as being unpatentable over *Yang* and *Lu* in view of *Goldstein et al.* (US 6,862,552) (hereinafter *Goldstein*).

D. Whether claims 11-13 were properly rejected under 35 U.S.C. 103(a) as being unpatentable over *Yang* and *Lu* in view of *Dougherty et al.* (US 6,831,902) (hereinafter *Dougherty*).

E. Whether claim 14 was properly rejected under 35 U.S.C. 103(a) as being unpatentable over *Yang* and *Lu* in view of *Bordogna et al.* (US 6,683,855) (hereinafter *Bordogna*).

F. Whether claim 30-32 were properly rejected under 35 U.S.C. 103(a) as being unpatentable over *Yang* in view of *Lu* in further view of *Brankovic* (US 6,198,460) (hereinafter *Brankovic*).

G. Whether claims 1-4, 6, 10-16, 18, 20-21, and 30-32 were properly objected to as having elements that lack antecedent basis within the claim.

7. ARGUMENT

Rejections Under 35 U.S.C. 112, Second Paragraph

Claims 1-4, 6, 10-16, 18, 20-21, and 30-32 were rejected under 35 USC § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner takes the position that claims 1, 15, and 30 are indefinite since it is not clear whether the Applicant intends them to be independent claims or dependent claims. The Applicants respectfully disagree. It is abundantly clear that the Applicants “intend” claims 1, 15, and 30 to be independent claims as these claims do not refer back to other claims. Each of these independent claims involves a very long parity check matrix (~14 pages long using 4 columns). The full parity check matrix is disclosed in Appendix A of the specification-as-filed, in list file form. Because the parity check matrix is very long, the claims were written to refer to “Appendix A” rather than include the full matrix description in each claim (which would result in independent claims that are 14+ pages in length). The reference to an “Appendix” in the claims of a patent is a technique that has been allowed by the U.S. Patent and Trademark Office in the past (see, e.g., U.S. Patent No. 6,563,436 to Fimoff et al. and U.S. Patent No. 6,795,505 to Felts, both identified in the response to non-final action filed on September 4, 2007 in the present application) and it is believed that such reference is warranted in the present application. It is submitted that such reference does not change an independent claim into a dependent claim. Rather, this technique more closely resembles the practice of a patent drafter defining a term in the specification and then using the term, without the definition, in a claim. To interpret the term in the claim, one has to refer back to the specification and retrieve the definition. “Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim.” *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999).

As described at page 9, line 25 to page 10, line 1 of the specification-as-filed of the present application, the LDPC code associated with the parity check matrix of Appendix A was “designed to provide good performance with variable-length data blocks, while still achieving a manageable implementation complexity. The codeword length has been selected to provide a good tradeoff between performance and complexity for use in wireless (and some wireline)

applications.”

The Examiner further takes the position that claims 1 and 30 are indefinite because there is no antecedent basis within the claims for “Appendix A.” The Applicants submit that the Examiner is misconstruing the requirement for antecedent basis within a claim. In MPEP section 2173.05(e), it states that “[a] claim is indefinite when it contains words or phrases whose meaning is unclear. The lack of clarity could arise where a claim refers to ‘said lever’ or ‘the lever,’ where the claim contains no earlier recitation or limitation of a lever and where it would be unclear as to what element the limitation was making reference.” In claims 1 and 30, the meaning of “Appendix A” is not unclear and a definite article such as “the” or “said” is not used in connection therewith. MPEP section 2173.05(e) also states “If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite.” It is submitted that the scope of claims 1 and 30 is reasonably ascertainable.

In the claim rejection, the Examiner refers to 37 CFR 1.75 to support his assertion that there is no antecedent basis for the phrase “Appendix A” within the claim itself. The Examiner takes the position that 37 CFR 1.75 states that “a claim may not contain any other parts of the application or other material.” The Applicants respectfully disagree. In 37 CFR 1.75(h), it states that, “The claim or claims must commence on a separate physical sheet or electronic page. Any sheet including a claim or portion of a claim may not contain any other parts of the application or other material.” (Emphasis added) That is, a sheet containing a claim or a portion of a claim may not also contain, for example, the Abstract section of the application, the Background section of the application, etc. This rule is not referring to language within a claim but to other information that might improperly share a sheet with a claim. As such, the Examiner has incorrectly applied this rule in the present rejection.

The Examiner also relies on MPEP 608.01(m) to support the claim rejection under 35 USC § 112, second paragraph. This section of the MPEP discusses the use of reference characters within the claims. Reference characters are the numerals or other indicia that are used within drawings to refer to specific structures or steps illustrated within the drawings (see, for example, 37 CFR

1.84(p)). Appendix A is an appendix and not a drawing and the phrase “Appendix A” is not a reference character. Therefore, the Examiner has incorrectly applied MPEP 608.01(m) in the present rejection and the rejection should be withdrawn.

It is submitted that the language of the present claims is clear. For example, claim 1 recites “a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix.” Appendix A of the present application describes a specific parity check matrix, in list file form. In accordance with the claim, a portion of this parity check matrix is stored on the computer readable storage medium. In addition, the portion of the parity check matrix that is stored on the computer readable storage medium includes at least half of the parity check matrix described in Appendix A. The form in which the parity check matrix is shown in Appendix A does not matter. The detailed description of the present application describes how a matrix is described in list file form and a person of ordinary skill in the art can easily convert the list file form of Appendix A to the traditional matrix form.

With regard to 35 USC 112, second paragraph, MPEP 2173 states “The primary purpose of this requirement of definiteness of claim language is to ensure that the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent.” (Emphasis added.) MPEP 2173.01 states that “Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought.” (Emphasis added.) As described above, the scope of claims 1-4, 6, 10-16, 18, 20-21, and 30-32 would be clear to a person of ordinary skill in the art. Appendix A describes a specific matrix in a format that a person of ordinary skill in the art would easily comprehend. For example, in claim 1, at least a portion of the matrix of Appendix A is stored on a computer readable storage medium within a wireless apparatus. The portion that is stored is at least half of the matrix. A person of ordinary skill in the art would have no problem determining the scope of this claim language. Thus, the claim is not indefinite.

The Examiner further takes the position that Appendix A does not teach a matrix but a list file form of a matrix and, therefore, it is not clear what the Applicant is trying to claim. This is not true. The list file format is simply one method for describing a matrix. The format is fully described within the specification of the present application in a manner that a person of ordinary skill in the art would easily comprehend.

In addition to the above, the Examiner also states that the "Appendix does not provide any description; hence 'as described in Appendix A' is not clear what is being stored." As described above, the claim clearly describes what is being stored. That is, at least half of the parity check matrix described in Appendix A. In addition, as described above, the list file format is fully described within the specification of the present application in a manner that a person of ordinary skill in the art would easily comprehend.

Based on the foregoing, it is submitted that claims 1-4, 6, 10-16, 18, 20-21, and 30-32 are not indefinite under 35 USC § 112, second paragraph. The Examiner has not cited a single rule, law, or case that supports this rejection. In contrast, the Applicants have provided two examples of issued U.S. patents that use the same basic claiming style as the present application to incorporate lengthy material into the claims. It is therefore respectfully requested that the rejection be withdrawn and the claims allowed in their present form.

Rejections Under 35 USC § 103(a)

Claims 1, 2, 4, 6, 10, 15, 16, 18, 20, and 34-38 were rejected under 35 USC § 103(a) as being unpatentable over Yang in view of Lu.

Independent Claim 1

Independent claim 1 is directed to a wireless apparatus comprising: (a) a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code, said FEC coder including: (i) a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A

and said first portion includes at least half of said parity check matrix; (ii) a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate modified data; (iii) a differential encoder to differentially encode said modified data to generate coded data; and (iv) a concatenation unit to concatenate the input data and the coded data to form a code word; and (b) a wireless transmitter to transmit a wireless signal that includes said code word.

The Examiner takes the position that no patentable weight can be given to the contents of "Appendix A" in the independent claims of the present application for substantially the same reasons given to support the rejection under 35 USC § 112, second paragraph described above. That is, (a) a claim may not contain other parts of the application, (b) the phrase "Appendix A" is a reference character that should be placed in parentheses, (c) there is no antecedent basis in the claim for "Appendix A," and (d) "Appendix A" does not teach or describe a matrix but a list form of a matrix.

As set out in detail above, it is submitted that none of these arguments are valid. As such, the Examiner has not cited a single rule, law, or case to support the position that reference to an appendix within a claim is indefinite or entitled to no patentable weight. In contrast, the Applicants have provided two examples of issued U.S. patents that use the same basic claiming style as the present application to incorporate lengthy material into the claims. The recitation of Appendix A in a claim is not a reference character and the subject matter of Appendix A should be given full patentable weight. It is submitted that all of the present claims are allowable when the subject matter of Appendix A is properly considered and given the appropriate weight.

The portion of the parity check matrix described in Appendix A that is stored on the computer readable storage medium is functional descriptive material (see MPEP 2106.01). As described at page 9, line 25 to page 10, line 1 of the specification-as-filed of the present application, the LDPC code associated with the parity check matrix of Appendix A was "designed to provide good performance with variable-length data blocks, while still achieving a manageable implementation complexity. The codeword length has been selected to provide a good tradeoff between performance and complexity for use in wireless (and some wireline) applications." None of the references cited by the Examiner, either alone or in combination, disclose or

suggest a computer readable storage medium having the claimed parity check matrix (or a portion thereof) stored thereon.

The Examiner next takes the position that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. Thus, the Examiner asserts that a data structure cannot be used to distinguish an apparatus. However, claim 1 does not merely recite a data structure as an element of an apparatus claim. Instead, it recites "a computer readable storage medium storing at least a first portion of a parity check matrix." It is submitted that a computer readable medium having at least a portion of a parity check matrix stored thereon represents structure in addition to function. "When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized." MPEP 2106.01 (emphasis added). Therefore, the computer readable storage medium with the parity check matrix information stored thereon is a structural element that is claimed as part of an apparatus claim.

By failing to address the content of Appendix A in the rejection of independent claim 1, the Examiner has failed to provide a *prima facie* case of unpatentability with regard to independent claim 1. "If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444.

Based on the foregoing, it is submitted that claim 1 is not obvious in light of the combination of Yang and Lu. Allowance of claim 1 is therefore respectfully requested.

Independent Claim 34

Claim 34 was amended in a previous response to include the entire parity check matrix of Appendix A of the specification-as-filed. As shown in the claims appendix attached hereto, claim 34 is fourteen pages long when four columns are used for the matrix description. This claim illustrates why the claim writing strategy of independent claims 1, 15, and 30 was used. If the full matrix was

included in all four independent claims, the patent application would include 56 pages just for the independent claims.

Even though the full parity check matrix of Appendix A was included in revised claim 34, the Examiner rejected the claim in the final action based on the same arguments described above in connection with claim 1; namely, (a) a claim may not contain other parts of the application, (b) the phrase "Appendix A" is a reference character that should be placed in parentheses, (c) there is no antecedent basis in the claim for "Appendix A," (d) "Appendix A" does not teach or describe a matrix but a list form of a matrix, and (e) claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. As described above in the discussion of claim 1, it is believed that none of these arguments are valid. For example, arguments (a), (b), and (c) are moot as claim 34 no longer refers to "Appendix A." As for argument (d), the Examiner is incorrect. The list file format is simply one method for describing a matrix. The format is fully described within the specification of the present application in a manner that a person of ordinary skill in the art would easily comprehend. Regarding argument (e), this does not apply because claim 34 is a Bearegard claim.

None of the references cited by the Examiner, either alone or in combination, disclose or suggest a computer readable storage medium having instructions stored thereon that, when executed by a computing platform operate to matrix multiply input data by a transpose of a first portion of the claimed parity check matrix of claim 34.

The Examiner has failed to provide a *prima facie* case of unpatentability with regard to independent claim 34. "If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444.

Based on the foregoing, it is submitted that claim 34 is not obvious in light of the combination of Yang and Lu. Allowance of claim 34 is therefore respectfully requested.

Independent Claim 15

Independent claim 15 is directed to a method comprising: (a) accessing a computer readable storage medium storing a representation of at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix; (b) matrix multiplying input data by a transpose of said first portion of said parity check matrix; (c) processing a result of said matrix multiplication using differential encoding to generate coded data; (d) concatenating said input data and said coded data to form a code word; and (e) generating and transmitting a wireless signal that includes said code word.

The Examiner takes the position that no patentable weight can be given to the contents of "Appendix A" in the independent claims of the present application for substantially the same reasons given to support the rejection under 35 USC § 112, second paragraph described above. That is, (a) a claim may not contain other parts of the application, (b) the phrase "Appendix A" is a reference character that should be placed in parentheses, (c) there is no antecedent basis in the claim for "Appendix A," and (d) "Appendix A" does not teach or describe a matrix but a list form of a matrix.

These arguments have been addressed above in the discussion of claim 1. The recitation of Appendix A in a claim is not a reference character and the subject matter of Appendix A should be given full patentable weight. It is submitted that all of the present claims are allowable when the subject matter of Appendix A is properly considered and given the appropriate weight.

The Examiner has failed to provide a *prima facie* case of unpatentability with regard to independent claim 34. "If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444.

Based on the foregoing, it is submitted that claim 15 is not obvious in light of the combination of Yang and Lu. Allowance of claim 15 is therefore respectfully requested.

Dependent Claims

Claims 2, 4, 6, and 10; claims 16, 18, and 20; and claims 35-38 are dependent claims that depend either directly or indirectly from independent claims 1, 15, and 34, respectively.

Consequently, these claims are allowable for at least the same reasons as their corresponding base claims. These claims also provide further bases for patentability.

Dependent Claims 4, 18, and 37

Dependent claim 4 further defines the “first portion of said parity check matrix” of claim 1 as being “a portion that includes columns of said parity check matrix having a column weight of 4.” Reference to claim 1 shows that it is the transpose of the first portion of the parity check matrix that is matrix multiplied with the input data within the matrix multiplication unit to generate the modified data. None of the references relied upon by the Examiner, either alone or in combination, teach or suggest a matrix multiplier that matrix multiplies input data by the transpose of a portion of a parity check matrix, where the portion is the part of the parity check matrix having columns of weight 4. The Examiner takes the position that Yang teaches arbitrary weight w columns. However, this is not the same as, nor does it suggest, the claimed subject matter described above. A similar argument applies to dependent claims 18 and 37.

Claims 30-32 were rejected under 35 USC § 103(a) as being unpatentable over Yang and Lu in further view of Brankovic.

Independent Claim 30

Independent claim 30 is allowable for at least the same reasons as claim 1 discussed above.

Dependent Claims

Claims 31-32 are dependent claims that each depend directly from claim 30. Consequently, these claims are allowable for at least the same reasons as independent claim 30. As described in the previous response, these claims also provide further bases for patentability. For example, claim 32 should be allowable for substantially the same reasons as claim 4 discussed above.

Claims 3 and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yang and Lu in view of Goldstein.

Claims 3 and 21 are dependent claims that depend directly from independent claims 1 and 15, respectively. Consequently, these claims are allowable for at least the same reasons as their corresponding base claims.

Claims 11-13 were rejected under 35 USC § 103(a) as being unpatentable over Yang and Lu in view of Dougherty.

Claims 11-13 are dependent claims that each depend directly from independent claim 1. Consequently, these claims are allowable for at least the same reasons as claim 1.

Claim 14 was rejected under 35 USC § 103(a) as being unpatentable over Yang and Lu in view of Bordogna.

Claim 14 is a dependent claim that depends directly from independent claim 1. Consequently, this claim is allowable for at least the same reasons as claim 1.

Claim Objections

Claims 1-4, 6, 10-16, 18, 20, 21, and 30-32 were objected to because some claims allegedly refer to elements that do not have antecedent basis in the claims.

This claim objection is traversed. The Examiner has presented substantially the same arguments in support of this objection that were presented in connection with the 35 USC § 112, paragraph 2 rejection discussed above. Namely, (a) a claim may not contain other parts of the application, (b) the phrase "Appendix A" is a reference character that should be placed in parentheses, and (c) there is no antecedent basis in the claim for "Appendix A." All of these arguments have been addressed above.

Based on the foregoing, it is submitted that the objection to claims 1-4, 6, 10-16, 18, 20, 21, and 30-32 was in error and should be withdrawn. The Examiner has not cited a single rule, law, or

case that supports this objection. It is therefore respectfully requested that the objection be withdrawn and the claims be allowed.

8. SUMMARY

For the reasons advanced above, the Appellant respectfully submits that all of the pending claims are in form for allowance. Therefore, reversal of all rejections is respectfully requested.

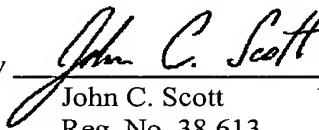
Respectfully submitted,

BO XIA ET AL.

By their Representatives,

Customer Number 45643

Date August 18, 2008

By 
John C. Scott
Reg. No. 38,613

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Appeal Brief, Commissioner of Patents, P.O.Box 1450, Alexandria, VA 22313-1450, on this 18th day of August, 2008.


Shellie Bailey

APPENDIX I

The Claims on Appeal

1. A wireless apparatus comprising:
 - a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code, said FEC coder including:
 - a computer readable storage medium storing at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix;
 - a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate modified data;
 - a differential encoder to differentially encode said modified data to generate coded data; and
 - a concatenation unit to concatenate the input data and the coded data to form a code word; and
 - a wireless transmitter to transmit a wireless signal that includes said code word.
2. The wireless apparatus of claim 1, wherein:
 - said wireless signal is an orthogonal frequency division multiplexing (OFDM) signal.
3. The wireless apparatus of claim 1, further comprising:
 - a mapper, between said FEC coder and said wireless transmitter, to map said code word based on a predetermined modulation scheme; and
 - an inverse discrete Fourier transform unit to convert mapped data from a frequency domain representation to a time domain representation.
4. The wireless apparatus of claim 1, wherein:
 - said first portion of said parity check matrix is a portion that includes columns of said parity check matrix having a column weight of 4.

5. (Canceled)
6. The wireless apparatus of claim 1, wherein:
said first portion of said parity check matrix includes said entire parity check matrix.
- 7.-9. (Canceled)
10. The wireless apparatus of claim 1, wherein:
said LDPC code is a (2000, 1600) LDPC code.
11. The wireless apparatus of claim 1, wherein:
said wireless apparatus is a wireless user device for use in a wireless network.
12. The wireless apparatus of claim 1, wherein:
said wireless apparatus is a wireless access point.
13. The wireless apparatus of claim 1, wherein:
said wireless apparatus is a wireless network interface module.
14. The wireless apparatus of claim 1, wherein:
said wireless apparatus is an integrated circuit.
15. A method comprising:
accessing a computer readable storage medium storing a representation of at least a first portion of a parity check matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix;
matrix multiplying input data by a transpose of said first portion of said parity check matrix;
processing a result of said matrix multiplication using differential encoding to generate coded

data;

concatenating said input data and said coded data to form a code word; and
generating and transmitting a wireless signal that includes said code word.

16. The method of claim 15, wherein:
said wireless signal is an orthogonal frequency division multiplexing (OFDM) signal.
17. (Canceled)
18. The method of claim 15, wherein:
said first portion of said parity check matrix is a portion that includes columns of said parity check matrix having a column weight of 4.
19. (Canceled)
20. The method of claim 15, wherein:
said parity check matrix defines a (2000, 1600) LDPC code.
21. The method of claim 15, wherein:
generating and transmitting a wireless signal includes mapping said code word into modulation symbols and processing said modulation symbols using an inverse discrete Fourier transform.
- 22.-29. (Canceled)
30. A system comprising:
a forward error correction (FEC) coder to encode digital data using a low density parity check (LDPC) code, said FEC coder including:
a computer readable storage medium storing at least a first portion of a parity check

matrix, wherein said parity check matrix is substantially as described in Appendix A and said first portion includes at least half of said parity check matrix;

a matrix multiplication unit to multiply input data by a transpose of said first portion of said parity check matrix to generate modified data;

a differential encoder to differentially encode said modified data to generate coded data; and

a concatenation unit to concatenate the input data and the coded data to form a code word;

a wireless transmitter to transmit a wireless signal that includes said code word; and

at least one dipole antenna coupled to said wireless transmitter to facilitate transmission of said wireless signal.

31. The system of claim 30, wherein:

said wireless signal is an orthogonal frequency division multiplexing (OFDM) signal.

32. The system of claim 30, wherein:

said first portion of said parity check matrix is a portion that includes columns of said parity check matrix having a column weight of 4.

33. (Canceled)

34. An article comprising a computer readable storage medium having instructions stored thereon that, when executed by a computing platform, operate to:

matrix multiply input data by a transpose of a first portion of a parity check matrix, wherein said first portion of said parity check matrix includes at least half of said parity check matrix;

process a result of said matrix multiplication using differential encoding to generate coded data;

concatenate said input data and said coded data to form a code word; and

generate and transmit a wireless signal that includes said code word;

143 225 316 323	55 114 134 293	22 131 256 349	60 168 227 254
92 140 191 358	240 283 299 333	47 52 339 346	162 231 270 377
69 315 329 343	0 24 57 100	50 288 342 388	14 102 139 158
6 121 205 284	46 84 322 341	26 87 247 283	28 79 155 318
58 66 254 337	5 43 45 221	67 127 132 136	28 40 63 236
1 47 178 395	29 217 274 301	146 264 321 323	163 181 258 279
129 151 212 228	81 93 116 278	210 275 319 346	158 176 273 334
66 146 243 265	93 174 213 231	57 160 252 261	80 236 256 380
22 140 157 180	64 201 251 385	26 54 170 197	74 156 214 358
120 208 313 321	76 134 278 370	120 218 229 341	176 229 251 283
290 350 370 382	71 93 182 398	44 53 124 323	19 104 114 162
56 94 184 215	38 174 250 377	0 113 315 358	141 284 291 358
84 119 337 344	19 116 357 372	110 144 246 298	77 123 157 361
2 156 244 398	81 91 164 307	89 91 99 346	141 154 215 338
9 106 200 336	180 186 241 251	21 32 216 393	55 294 296 298
22 37 150 270	239 254 331 342	37 170 209 342	80 109 272 364
3 110 326 367	107 149 250 295	49 58 357 399	43 206 287 363
235 276 290 335	73 221 295 362	18 23 31 373	81 175 206 261
82 187 193 297	75 97 242 279	159 172 195 366	31 94 275 317
43 183 297 379	32 197 244 313	213 335 337 378	10 123 141 279
194 239 243 293	245 248 276 296	1 103 159 277	44 64 157 270
90 144 228 350	59 230 322 347	96 159 209 387	160 243 290 373
170 206 321 395	17 246 291 364	102 165 234 378	39 217 262 324
72 138 254 300	125 157 227 390	173 245 356 376	19 185 312 389
25 196 201 279	122 205 279 348	57 230 240 314	211 271 277 291
56 59 362 379	61 298 340 380	1 89 153 166	19 148 155 324
28 121 170 277	12 31 256 328	25 32 264 342	24 94 124 314
61 273 351 386	119 163 178 217	265 276 321 324	3 85 193 349
71 76 232 328	61 129 185 200	57 211 274 360	68 175 202 253
62 109 190 201	34 38 104 295	12 291 311 348	139 160 337 377
111 162 190 227	119 289 349 377	34 220 258 282	21 224 249 398
189 272 288 302	50 314 322 367	52 58 109 379	113 122 206 327
14 49 147 334	28 48 248 382	116 248 337 369	7 10 156 245
33 53 213 238	32 41 128 201	87 146 183 278	140 182 192 235
53 219 368 379	91 115 220 368	42 96 318 361	161 291 324 387
126 149 188 339	45 151 196 265	32 176 312 361	31 232 237 350
108 118 182 393	152 190 198 317	69 258 310 389	30 184 235 387
0 37 160 295	157 212 242 275	1 84 182 300	136 226 269 327
158 200 335 356	2 40 249 283	45 124 161 396	4 93 136 167
11 20 229 397	195 280 299 345	15 76 99 101	47 148 309 348
77 86 212 250	142 151 220 395	62 248 354 375	73 225 252 290
79 193 262 336	70 121 252 382	78 258 262 311	44 213 361 386
43 104 125 376	52 244 279 297	181 265 364 368	79 319 361 381

74 251 339 356	127 138 177 398	68 113 296 389	189 298 326 381
100 105 246 293	20 69 239 264	12 257 286 325	235 317 320 333
68 101 191 285	3 126 132 163	50 287 294 327	127 301 348 376
32 103 323 355	66 88 169 271	149 259 356 367	51 286 309 377
122 188 228 305	88 197 201 387	3 12 178 309	17 70 139 187
6 77 291 397	1 51 135 149	63 92 166 368	54 180 184 344
70 76 259 276	257 294 331 356	97 190 199 363	85 311 318 327
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93 147 255 312	45 144 185 383	132 141 221 322	97 149 198 336
92 112 259 388	173 310 329 362	213 257 348 396	31 141 151 285
9 18 61 308	15 165 305 348	91 147 294 325	72 163 187 311
3 137 139 257	27 66 85 182	14 27 48 222	24 54 249 297
165 217 345 354	47 235 238 246	11 81 110 360	64 143 322 360
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186 213 227 303	118 150 267 324	35 89 248 252	100 138 214 226
68 194 294 346	68 82 309 398	6 55 319 345	265 348 373 378
35 225 284 312	72 154 226 231	107 116 223 271	42 62 113 174
117 188 340 346	76 135 151 384	168 240 261 384	29 313 349 358
258 299 306 331	39 48 80 309	54 204 295 351	154 179 217 268
83 194 207 349	0 178 305 353	3 51 146 299	164 289 380 392
43 141 175 329	88 136 196 321	74 184 307 361	109 165 236 312
0 68 170 262	37 95 222 300	9 202 272 387	92 141 193 238
25 36 153 309	23 343 358 369	106 198 281 329	190 243 267 275
57 62 273 323	195 252 303 349	36 105 225 236	95 143 203 393
7 19 75 264	9 81 102 317	90 139 183 299	130 213 264 308
21 254 259 366	20 219 285 316	152 160 292 354	102 133 217 226
8 97 156 172	219 281 304 354	11 115 227 236	69 88 116 295
9 185 313 330	33 121 319 351	152 202 211 373	108 217 273 322
55 219 253 393	21 157 191 260	4 173 346 374	26 287 306 343
86 120 185 233	0 88 303 307	132 197 238 279	8 18 136 152
41 136 191 242	13 23 62 268	16 94 150 222	110 240 245 334
194 265 303 393	13 173 279 320	241 344 375 386	225 255 278 310
256 285 310 399	117 189 253 392	31 121 161 231	63 168 170 303
103 247 275 378	32 40 57 350	9 33 197 350	8 17 255 314
115 218 225 285	57 123 148 368	87 197 233 312	28 92 98 200
98 196 217 328	18 96 164 326	100 111 129 368	112 201 244 392
177 267 306 350	84 103 107 359	184 278 289 346	134 216 344 383
82 299 320 395	92 338 350 355	76 177 227 356	21 97 115 396
139 251 364 381	16 70 242 338	11 132 246 314	28 69 120 380
42 118 178 194	20 74 141 179	46 93 103 309	34 259 267 314
73 100 198 286	159 246 248 365	20 33 64 196	55 72 87 223
68 249 292 376	207 292 387 399	111 134 194 204	43 180 185 252
13 216 221 256	38 148 303 347	76 116 140 238	23 113 133 277

258 285 347 350	38 75 137 166	181 190 288 379	65 80 99 167
246 253 318 399	62 92 124 366	38 73 249 368	269 296 303 356
12 78 90 369	73 83 105 136	45 49 264 394	45 106 232 346
17 93 96 102	69 134 200 366	89 112 218 316	86 195 293 391
109 162 318 360	179 324 366 386	144 186 297 343	140 193 245 321
22 83 151 290	72 82 188 192	152 177 233 237	88 150 183 380
141 191 240 266	100 120 189 375	74 171 223 334	230 253 315 373
25 90 138 390	244 252 318 329	4 16 44 89	53 184 258 263
81 113 265 382	3 105 116 203	103 165 177 358	17 79 261 286
88 142 210 283	280 282 288 365	53 217 342 383	94 293 302 397
10 40 43 140	38 196 330 369	58 88 126 370	170 218 358 376
2 195 268 328	20 31 113 381	4 214 243 383	61 246 287 292
117 240 257 374	56 173 205 390	5 96 155 354	61 162 245 303
298 332 350 365	2 30 165 366	7 61 214 237	25 286 333 355
60 122 240 313	41 75 169 302	90 241 261 367	159 241 263 354
157 215 274 397	210 271 330 334	39 161 202 206	134 186 305 327
11 41 164 274	60 109 199 348	101 132 135 250	33 38 283 301
67 76 92 104	27 89 214 388	117 191 213 352	17 44 159 398
19 192 305 344	77 79 83 289	132 233 270 303	108 167 174 374
23 35 125 224	119 236 323 383	16 251 266 370	90 105 172 257
152 163 352 385	1 44 271 372	41 45 60 99	93 165 180 353
40 161 165 329	25 42 104 215	182 197 276 331	137 289 296 386
113 215 245 378	144 153 357 362	40 257 262 322	241 273 276 359
80 168 262 382	133 153 273 383	148 208 332 352	44 94 211 286
81 136 165 239	152 174 269 355	127 159 253 290	166 184 204 226
2 42 248 323	107 193 210 320	273 289 325 341	98 281 357 389
111 127 157 330	194 298 317 331	95 145 231 297	41 107 187 298
79 125 239 341	22 112 139 222	70 110 225 313	19 47 379 399
147 172 187 397	147 152 221 365	50 112 166 302	1 16 272 296
230 245 277 352	20 48 130 353	68 97 128 218	107 203 283 322
49 202 350 381	58 100 125 172	90 264 269 280	77 245 266 390
34 56 167 242	79 181 242 313	22 132 258 368	29 166 345 364
36 58 61 83	174 254 304 321	65 124 129 325	61 229 356 361
107 110 133 251	70 129 283 385	95 105 111 385	70 105 229 250
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89 122 207 362	101 108 248 328	12 198 221 269	86 100 337 379
3 166 190 305	49 115 190 395	9 141 229 306	299 347 372 375
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34 37 293 301	27 206 209 324	242 289 318 335	145 252 294 377
143 189 255 338	203 221 332 356	41 90 163 215	155 218 250 392

131 172 250 278	80 90 174 249	94 261 312 341	43 213 328 362
17 64 107 195	182 310 314 318	167 186 202 372	73 231 244 282
26 55 142 181	115 254 336 399	8 29 355 393	71 221 245 253
106 181 327 342	42 63 135 343	36 126 155 373	215 225 258 335
101 103 340 368	46 232 385 391	145 195 227 333	46 87 263 384
44 196 198 280	24 27 171 183	45 206 344 369	81 96 282 338
39 148 192 385	237 293 322 352	8 166 301 397	192 222 306 353
37 130 182 207	81 90 223 363	11 47 141 184	8 115 292 305
57 242 262 316	71 85 128 380	7 112 256 377	36 170 186 260
20 171 259 396	159 309 314 334	108 300 310 312	10 85 212 300
257 288 338 361	17 117 315 379	208 218 364 378	5 129 198 365
12 290 362 367	87 120 206 267	53 114 278 291	19 107 153 308
153 236 304 330	67 116 188 349	131 138 201 365	10 57 98 215
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33 92 106 173	178 272 327 392	122 275 376 395	62 89 163 295
68 89 159 308	19 35 204 386	169 217 239 357	43 77 113 143
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95 199 219 225	24 225 233 338	82 152 277 367	69 129 168 187
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111 306 363 373	319 325 363 374	257 284 326 382	217 251 269 390
174 256 368 381	77 251 308 379	57 138 311 343	189 200 275 372
18 104 115 317	183 203 290 330	295 318 322 377	157 218 296 363
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97 99 300 385	222 271 380 393	61 74 304 382	28 32 182 198
40 150 229 316	79 107 201 351	30 70 168 253	56 263 316 328
124 315 322 359	66 90 275 287	64 156 306 332	87 168 275 343
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27 88 147 216	16 203 207 237	33 71 91 112	166 203 208 231
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57 131 209 296	2 39 326 373	22 208 226 392	20 78 193 213
230 237 264 371	51 151 305 341	56 60 158 164	123 180 253 323
28 118 231 283	6 25 30 130	20 105 120 199	208 229 271 386
5 114 230 309	2 91 146 227	133 232 236 341	1 52 116 383
122 189 204 251	46 141 273 298	90 107 293 370	13 55 71 106
74 151 203 218	157 331 374 385	17 32 254 263	7 306 347 364
69 270 288 359	172 223 237 258	8 173 238 266	145 163 197 228
22 49 291 383	15 93 128 250	30 167 169 391	66 97 212 320

133 176 282 305	23 64 310 348	36 43 189 216	74 190 343 352
22 187 205 372	63 130 188 352	44 142 195 344	258 325 332 371
102 160 180 258	23 45 160 165	40 147 260 330	14 256 347 353
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75 119 186 254	25 207 339 365	90 111 126 301	98 272 300 342
6 15 65 396	16 334 374 398	113 177 226 273	210 221 268 337
30 108 341 399	86 251 274 277	96 172 181 218	8 94 154 347
217 276 326 347	157 166 297 316	17 124 154 373	195 285 321 327
160 237 274 285	171 200 230 265	87 285 306 376	12 51 54 354
173 248 262 348	34 107 325 364	83 163 173 299	16 41 149 389
52 65 218 351	71 220 227 330	65 87 245 333	55 66 206 297
135 140 253 366	177 263 277 344	161 267 284 293	129 202 214 285
5 81 176 260	75 138 262 293	1 29 54 379	73 96 104 310
58 215 326 364	189 300 366 377	141 170 183 232	55 200 270 318
76 87 102 315	147 175 296 320	5 40 167 238	58 120 150 217
98 131 259 332	2 51 145 208	15 44 95 239	58 279 339 397
15 30 35 55	126 271 310 351	13 75 152 188	60 180 247 308
0 122 269 346	144 197 277 360	216 224 305 331	48 127 213 356
38 162 311 373	28 35 115 289	29 93 197 381	62 128 291 329
143 313 329 340	54 108 270 279	21 222 282 284	26 35 127 323
80 260 316 348	23 82 144 396	175 193 361 372	77 144 286 296
44 158 220 292	78 93 95 275	54 69 298 308	10 47 192 259
117 241 295 363	145 169 211 278	93 169 209 328	122 196 210 329
187 321 355 378	29 163 300 320	39 59 334 391	63 162 235 268
167 226 281 351	33 147 219 391	108 254 340 376	25 45 218 310
0 200 309 384	199 214 265 280	141 246 264 388	67 336 354 393
36 171 193 328	62 133 156 219	96 267 362 392	16 278 347 381
107 178 228 240	31 34 72 115	131 234 291 330	14 39 209 395
80 146 156 375	246 260 267 286	4 168 220 235	21 55 85 304
75 90 290 312	7 266 309 337	130 195 216 367	128 135 194 325
20 55 131 215	24 69 142 394	108 148 290 302	116 159 258 341
99 127 231 344	98 138 228 351	85 214 362 395	125 132 210 219
156 176 301 313	72 181 336 355	48 100 118 346	60 67 150 203
41 146 247 290	12 47 160 172	91 104 355 358	18 60 167 328
49 52 61 76	84 178 230 343	176 342 351 390	55 112 179 381
24 74 310 326	80 238 321 376	6 45 123 126	288 317 324 389
56 196 212 332	170 213 331 367	69 241 268 274	43 320 334 382
76 205 335 385	12 136 274 326	158 324 371 399	5 29 145 281
75 101 209 349	13 51 96 147	62 232 264 373	25 124 232 345
28 172 242 294	23 264 334 346	103 106 146 344	11 119 339 359
18 71 267 297	29 122 183 356	134 268 295 398	5 36 231 316
84 115 233 384	78 287 330 349	120 220 250 354	15 138 354 389
63 139 216 325	42 69 131 198	115 208 355 398	25 82 136 180

20 103 167 266	39 151 364 377	153 172 249 307	27 71 110 327
112 292 359 371	194 227 231 267	106 179 212 378	99 257 359 389
184 201 240 328	59 200 206 389	22 48 105 347	124 295 372 397
77 160 307 339	21 106 287 389	98 137 346 379	12 43 117 356
74 147 280 389	33 268 340 387	41 98 165 232	65 117 136 354
127 149 358 387	140 150 395 398	54 63 99 123	39 67 191 212
50 59 117 185	88 352 360 367	81 213 315 394	80 166 176 358
11 189 212 220	55 91 145 168	38 66 87 191	99 208 353 361
123 135 226 372	126 130 181 323	71 121 294 396	32 46 104 222
83 86 149 386	34 120 227 316	109 200 345 375	4 25 72 203
26 95 121 163	237 337 355 394	33 70 217 266	2 124 130 262
30 54 178 315	34 186 219 313	11 111 210 240	28 113 210 232
136 301 341 365	280 330 340 375	261 271 290 396	66 77 158 268
21 59 265 299	76 230 354 378	190 225 298 369	61 98 202 330
111 154 282 297	5 178 293 297	16 140 227 352	47 67 181 247
6 74 290 349	142 223 234 381	118 183 262 383	51 204 209 307
121 142 174 236	48 239 260 399	17 218 260 350	125 198 289 301
108 129 152 261	58 270 336 360	50 56 278 351	136 214 216 263
152 164 205 377	24 123 271 347	15 36 150 280	97 270 314 338
144 281 332 335	12 76 137 280	18 107 151 176	78 127 215 226
92 244 315 326	107 226 302 367	22 188 244 337	27 242 348 357
66 128 170 221	175 186 208 366	72 186 302 350	94 181 191 363
21 109 174 397	65 183 369 376	65 145 221 239	7 91 93 348
5 154 201 239	60 169 292 350	52 117 331 393	60 193 267 333
80 183 261 293	44 169 240 362	7 37 265 285	185 237 272 381
18 143 335 392	146 187 293 319	56 283 338 382	15 52 166 225
13 139 155 230	198 219 343 380	78 217 337 351	27 100 126 275
145 156 300 327	148 188 256 304	6 247 249 370	70 96 163 333
118 153 171 366	171 189 266 341	1 161 241 255	11 175 273 282
15 152 331 364	94 108 244 288	101 166 183 220	14 212 392 398
161 171 307 317	16 42 200 250	99 198 326 335	91 105 300 382
49 56 127 185	2 64 193 399	105 234 340 384	4 79 232 370
104 168 283 305	129 172 276 379	60 233 242 397	21 75 158 347
199 202 343 399	26 176 234 319	207 215 223 293	331 341 343 386
15 164 192 273	118 135 205 312	233 279 351 380	0 103 163 270
62 199 222 228	115 176 290 359	83 106 188 311	7 95 171 326
67 94 166 256	9 143 188 374	97 185 361 392	16 24 49 133
85 227 250 321	96 186 247 353	14 26 72 304	58 242 363 390
91 121 295 324	30 72 320 388	51 162 194 387	8 236 254 290
3 16 308 340	17 137 186 193	94 245 273 287	50 83 140 370
143 157 307 395	34 229 265 284	26 177 205 314	233 258 340 364
36 77 116 340	129 207 282 287	14 92 385 389	63 289 292 313
3 98 101 125	68 118 275 305	111 211 366 390	231 245 336 342

35 38 246 299	11 211 321 384	66 108 222 274	96 255 374 376
104 246 249 281	144 282 337 386	28 59 164 167	85 146 204 366
161 248 285 325	33 79 327 385	201 204 313 324	146 254 365 391
13 21 192 220	30 110 179 321	73 311 388 397	114 148 151 373
82 89 200 209	86 133 234 284	109 186 243 261	60 121 145 343
8 264 313 368	54 58 72 289	116 125 276 398	112 195 277 296
11 26 242 286	22 145 269 373	58 185 287 293	29 302 310 334
37 248 303 388	81 172 211 381	40 203 279 314	38 156 251 280
64 187 324 392	59 246 252 255	46 50 86 255	130 209 249 266
209 216 230 243	34 113 207 286	23 48 109 120	43 161 250 322
73 241 250 260	69 100 222 231	236 297 325 333	7 168 182 185
181 187 235 239	14 150 387 396	123 155 320 384	15 45 189 286
63 193 300 329	17 73 228 248	36 67 169 274	191 205 301 305
291 332 354 396	29 193 232 259	54 102 191 239	155 235 282 299
19 103 260 383	40 148 359 374	8 109 198 391	40 114 194 372
5 303 328 375	38 281 316 327	143 176 238 370	249 263 323 372
131 237 298 384	70 87 100 395	39 41 105 208	36 214 252 380
103 183 281 286	26 231 295 369	126 197 342 357	176 201 258 373
5 224 263 358	214 234 269 288	9 40 191 384	102 208 340 379
197 199 247 382	77 154 320 365	51 148 207 270	85 161 240 262
18 228 332 344	27 76 86 155	49 114 243 360	5 17 199 339
16 26 57 68	65 139 175 240	60 87 303 370	150 230 306 341
2 158 259 384	33 130 223 286	138 190 248 283	46 123 204 318
128 181 371 398	215 271 317 344	78 97 139 144	71 130 143 271
98 179 247 319	8 47 113 153	177 180 244 272	208 268 365 396
41 71 138 326	194 233 361 377	44 123 243 287	257 263 336 395
175 244 301 317	88 202 284 394	122 211 304 388	218 267 334 360
81 145 226 371	29 118 285 380	70 117 278 332	53 74 255 302
125 202 226 309	96 154 312 383	31 85 343 394	104 175 302 311
115 169 276 298	19 250 318 359	47 133 244 312	228 338 360 369
192 268 296 391	32 282 289 334	20 144 299 368	8 35 112 394
31 167 220 223	56 272 294 303	25 84 335 395	39 130 336 365
39 241 358 382	10 68 72 210	102 199 213 283	13 170 198 378
67 112 159 236	184 261 382 386	64 164 169 224	56 156 162 181
71 180 208 266	202 204 315 342	50 152 224 276	47 95 104 272
59 143 248 394	66 102 195 207	42 184 390 398	9 291 333 362
99 128 223 388	97 243 272 301	1 73 349 396	121 128 193 322
6 192 221 351	92 128 156 304	238 317 354 385	159 276 311 392
129 238 257 378	68 313 385 390	46 70 296 379	15 42 105 267
29 192 252 392	13 32 49 271	156 247 278 334	4 23 202 388
6 110 177 269	4 80 123 277	130 235 319 390	23 61 260 307
29 79 205 241	89 135 243 375	0 108 120 213	42 124 355 380
233 246 325 331	88 372 381 388	11 93 146 235	124 259 374 386

136 140 207 317	64 278 290 357	173 216 220 247	142 161 286 312
9 278 280 325	20 116 173 251	246 306 375 384	34 111 221 243
4 19 59 360	97 261 308 393	75 160 187 263	40 66 91 391
21 79 94 356	20 100 146 165	171 236 329 389	55 120 165 209
26 158 345 353	67 84 164 376	58 178 196 380	4 28 46 292
95 172 261 374	155 260 300 352	171 203 256 370	149 222 244 357
27 119 364 373	116 118 147 233	5 134 277 330	190 339 362 364
35 245 335 374	61 174 328 371	110 153 320 336	10 67 187 338
139 162 184 228	30 60 155 368	24 93 369 383	2 132 168 263
53 84 214 363	39 142 169 232	35 100 244 361	9 63 294 305
17 153 242 386	54 76 318 358	327 345 369 396	26 60 148 224
30 137 274 313	196 341 352 391	27 37 185 277	59 157 188 224
68 169 256 369	61 63 333 350	257 259 321 362	139 220 320 349
30 119 206 394	42 130 307 331	23 253 280 370	69 202 336 385
224 325 365 380	25 190 224 282	13 44 99 224	20 92 313 331
50 178 188 274	57 238 375 393	57 69 114 224	44 79 316 392
2 56 169 225	5 158 186 355	70 154 185 352	104 177 254 335
43 75 167 296	83 110 385 399	34 269 338 367	4 199 234 308
28 131 274 304	48 154 166 308	77 170 234 326	76 139 192 332
107 263 309 385	2 75 288 340	138 171 192 269	1 252 322 331
101 238 310 395	86 223 248 264	173 192 284 371	89 217 352 378
35 58 238 345	67 135 158 350	68 155 164 353	83 156 175 211
43 61 106 391	80 133 345 351	4 22 201 212	75 132 341 364
86 113 161 390	51 195 265 335	206 234 259 270	78 106 204 272
35 316 329 376	63 117 159 196	35 168 176 389	65 159 214 284
37 161 224 306	13 16 37 143	103 162 351 370	141 161 342 353
14 53 98 269	70 95 306 391	49 59 102 212	336 375 381 397
179 207 236 269	178 187 249 316	155 192 270 287	143 260 291 302
10 163 205 369	37 52 162 307	4 81 95 119	84 298 339 375
31 92 162 396	173 211 237 344	135 138 200 301	219 234 357 374
85 268 314 345	41 114 210 233	11 32 294 357	0 118 292 328
1 31 249 319	102 202 287 354	10 73 84 173	19 119 226 387
35 56 281 333	136 185 223 303	25 48 97 145	115 167 294 319
137 199 223 376	86 265 287 355	7 223 280 366	53 222 233 236
52 320 338 362	11 66 131 255	83 137 247 276	18 52 63 182
65 224 307 390	124 147 319 392	31 56 117 325	79 102 148 311
146 310 346 384	46 67 152 380	211 281 307 358	140 270 351 369
101 138 193 307	64 82 111 312	49 118 211 372	91 255 289 389
234 314 342 394	78 123 264 317	70 179 221 371	163 285 330 338
19 109 127 214	24 45 85 295	38 260 266 388	237 251 312 359
40 80 132 196	118 141 244 255	142 222 253 335	39 186 288 301
183 213 229 249	17 164 229 252	83 88 180 363	29 188 211 367
105 228 232 238	27 132 134 179	153 371 374 393	269 298 391 397

85 95 292 307	272 323 339 367	111 142 267 321	109 153 189 370
72 150 266 314	99 160 273 330	27 203 228 361	14 110 338 381
101 199 253 359	194 274 324 368	52 277 309 390	101 142 257 376
18 41 259 368	51 127 158 191	33 57 284 302	93 129 359 394
122 125 185 324	2 98 164 393	35 50 66 219	133 137 142 314
58 294 318 365	90 108 149 315	22 27 149 215	187 215 269 294
84 210 216 235	8 122 129 299	13 28 84 206	116 121 300 363
54 142 147 355	8 48 64 210	59 108 337 349	57 251 267 386
73 91 174 353	56 106 207 240	73 171 273 345	14 126 335 379
15 48 292 323	48 87 212 340	68 140 200 363	31 133 250 268
4 62 67 126	38 231 288 394	38 111 233 358	9 183 241 342
109 129 191 203	137 353 378 393	157 289 328 372	37 164 279 324
143 154 168 205	119 150 272 355	160 188 284 327	118 130 187 270
24 75 127 304	64 92 190 291	137 304 349 374	135 169 182 319
34 142 182 363	4 51 121 215	140 168 204 341	6 149 204 220
10 198 303 308	119 171 229 253	132 223 298 336	63 150 214 259
146 258 273 361	65 357 363 370	71 114 184 200	19 65 348 388
113 132 220 359	83 172 197 280	60 135 323 399	15 46 151 383
39 179 252 274	27 131 360 396	9 38 179 245	22 160 227 230
6 176 199 318	77 136 150 309	114 157 229 366	124 166 279 317
33 55 95 124	3 121 179 230	229 297 323 342	45 130 237 361
134 228 283 329	10 104 152 326	24 36 89 106	6 189 316 347
75 175 339 371	64 134 178 182	101 134 140 381	74 135 142 311
78 89 202 322	214 300 353 386	50 148 194 257	85 153 177 222
85 197 310 390	110 254 268 346	1 222 340 378	120 154 210 237
59 112 305 323	272 304 337 347	67 155 220 365	0 98 291 388
154 163 287 305	37 165 235 262	15 156 210 262	32 259 287 333
83 195 206 264	1 36 234 297	53 125 134 231	184 314 389 397
45 209 255 311	69 281 347 371	192 337 357 360	101 189 296 383
54 182 261 302	59 264 271 348	170 203 216 266	126 160 235 240
128 190 241 384	175 255 277 357	2 71 74 362	111 120 212 288
7 48 66 82	51 97 374 399	40 97 101 356	10 174 209 291
173 315 372 382	108 223 317 360	54 117 145 201	112 114 186 239
41 49 117 320	82 125 216 228	34 81 147 326	164 179 304 346
45 82 120 133	134 154 172 317	5 121 256 311	90 127 252 284
6 42 195 295	49 65 74 157	14 176 272 383	53 173 282 333
171 201 344 377	3 112 266 356	283 297 340 396	82 87 98 354
94 179 205 344	81 204 254 262	7 36 307 320	77 106 138 345
32 144 219 315	3 113 263 332	114 241 271 315	74 329 360 366
226 257 333 386	100 151 205 240	96 179 249 302	167 322 332 395
24 102 182 375	95 125 180 303	7 9 170 394	52 88 276 294
49 86 123 175	234 292 306 352	46 284 308 388	47 199 299 391
62 151 266 298	149 227 349 355	104 158 332 362	3 219 275 297

3 30 375 378	174 206 285 292	34 35	77 78
110 134 158 282	14 43 99 137	35 36	78 79
151 188 359 388	87 111 371 377	36 37	79 80
191 199 304 333	73 137 177 261	37 38	80 81
42 191 274 383	10 105 184 352	38 39	81 82
51 99 384 394	126 286 347 390	39 40	82 83
146 343 367 376	72 91 148 196	40 41	83 84
153 247 284 375	12 162 292 363	41 42	84 85
36 133 204 243	6 112 273 399	42 43	85 86
110 224 265 277	0 1	43 44	86 87
86 129 319 371	1 2	44 45	87 88
103 127 201 336	2 3	45 46	88 89
39 50 247 256	3 4	46 47	89 90
119 165 230 370	4 5	47 48	90 91
21 82 248 311	5 6	48 49	91 92
84 137 239 315	6 7	49 50	92 93
1 155 239 268	7 8	50 51	93 94
265 278 329 342	8 9	51 52	94 95
18 118 234 242	9 10	52 53	95 96
135 189 337 353	10 11	53 54	96 97
18 28 123 159	11 12	54 55	97 98
26 44 88 267	12 13	55 56	98 99
12 50 103 251	13 14	56 57	99 100
144 242 244 372	14 15	57 58	100 101
53 181 221 229	15 16	58 59	101 102
46 89 180 281	16 17	59 60	102 103
3 53 285 382	17 18	60 61	103 104
175 184 205 209	18 19	61 62	104 105
94 208 276 349	19 20	62 63	105 106
14 37 131 266	20 21	63 64	106 107
135 227 367 392	21 22	64 65	107 108
13 59 103 207	22 23	65 66	108 109
48 78 84 243	23 24	66 67	109 110
94 252 262 306	24 25	67 68	110 111
168 316 324 380	25 26	68 69	111 112
196 255 260 394	26 27	69 70	112 113
11 105 178 243	27 28	70 71	113 114
19 122 177 339	28 29	71 72	114 115
64 203 304 319	29 30	72 73	115 116
12 174 194 208	30 31	73 74	116 117
46 52 271 377	31 32	74 75	117 118
62 149 169 353	32 33	75 76	118 119
133 205 239 387	33 34	76 77	119 120

120 121	163 164	206 207	249 250
121 122	164 165	207 208	250 251
122 123	165 166	208 209	251 252
123 124	166 167	209 210	252 253
124 125	167 168	210 211	253 254
125 126	168 169	211 212	254 255
126 127	169 170	212 213	255 256
127 128	170 171	213 214	256 257
128 129	171 172	214 215	257 258
129 130	172 173	215 216	258 259
130 131	173 174	216 217	259 260
131 132	174 175	217 218	260 261
132 133	175 176	218 219	261 262
133 134	176 177	219 220	262 263
134 135	177 178	220 221	263 264
135 136	178 179	221 222	264 265
136 137	179 180	222 223	265 266
137 138	180 181	223 224	266 267
138 139	181 182	224 225	267 268
139 140	182 183	225 226	268 269
140 141	183 184	226 227	269 270
141 142	184 185	227 228	270 271
142 143	185 186	228 229	271 272
143 144	186 187	229 230	272 273
144 145	187 188	230 231	273 274
145 146	188 189	231 232	274 275
146 147	189 190	232 233	275 276
147 148	190 191	233 234	276 277
148 149	191 192	234 235	277 278
149 150	192 193	235 236	278 279
150 151	193 194	236 237	279 280
151 152	194 195	237 238	280 281
152 153	195 196	238 239	281 282
153 154	196 197	239 240	282 283
154 155	197 198	240 241	283 284
155 156	198 199	241 242	284 285
156 157	199 200	242 243	285 286
157 158	200 201	243 244	286 287
158 159	201 202	244 245	287 288
159 160	202 203	245 246	288 289
160 161	203 204	246 247	289 290
161 162	204 205	247 248	290 291
162 163	205 206	248 249	291 292

292 293	335 336	378 379
293 294	336 337	379 380
294 295	337 338	380 381
295 296	338 339	381 382
296 297	339 340	382 383
297 298	340 341	383 384
298 299	341 342	384 385
299 300	342 343	385 386
300 301	343 344	386 387
301 302	344 345	387 388
302 303	345 346	388 389
303 304	346 347	389 390
304 305	347 348	390 391
305 306	348 349	391 392
306 307	349 350	392 393
307 308	350 351	393 394
308 309	351 352	394 395
309 310	352 353	395 396
310 311	353 354	396 397
311 312	354 355	397 398
312 313	355 356	398 399
313 314	356 357	399.
314 315	357 358	
315 316	358 359	
316 317	359 360	
317 318	360 361	
318 319	361 362	
319 320	362 363	
320 321	363 364	
321 322	364 365	
322 323	365 366	
323 324	366 367	
324 325	367 368	
325 326	368 369	
326 327	369 370	
327 328	370 371	
328 329	371 372	
329 330	372 373	
330 331	373 374	
331 332	374 375	
332 333	375 376	
333 334	376 377	
334 335	377 378	

35. The article of claim 34, wherein:
said wireless signal is an orthogonal frequency division multiplexing (OFDM) signal.
36. The article of claim 34, wherein said instructions, when executed by the computing platform, further operate to:
access a storage medium having at least a portion of said parity check matrix stored thereon before matrix multiplying.
37. The article of claim 34, wherein:
said first portion of said parity check matrix is a portion that includes columns of said parity check matrix having a column weight of 4.
38. The article of claim 34, wherein:
said parity check matrix defines a (2000, 1600) LDPC code.

APPELLANTS' BRIEF ON APPEAL

Serial Number: 10/815,133

Filing Date: March 31, 2004

Title: METHOD AND APPARATUS FOR IMPLEMENTING A LOW DENSITY PARITY CHECK CODE IN A WIRELESS SYSTEM

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APPENDIX II

Evidence

None

APPELLANTS' BRIEF ON APPEAL

Serial Number: 10/815,133

Filing Date: March 31, 2004

Title: METHOD AND APPARATUS FOR IMPLEMENTING A LOW DENSITY PARITY CHECK CODE IN A WIRELESS SYSTEM

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Dkt: 1000-0037

APPENDIX III

Related Proceedings

None